Dec. 30. 1924. 1,521,568

T. L. STINE

AMUSEMENT DEVICE

Filed Nov. 7, 1922 5 Sheets-Sheet 1

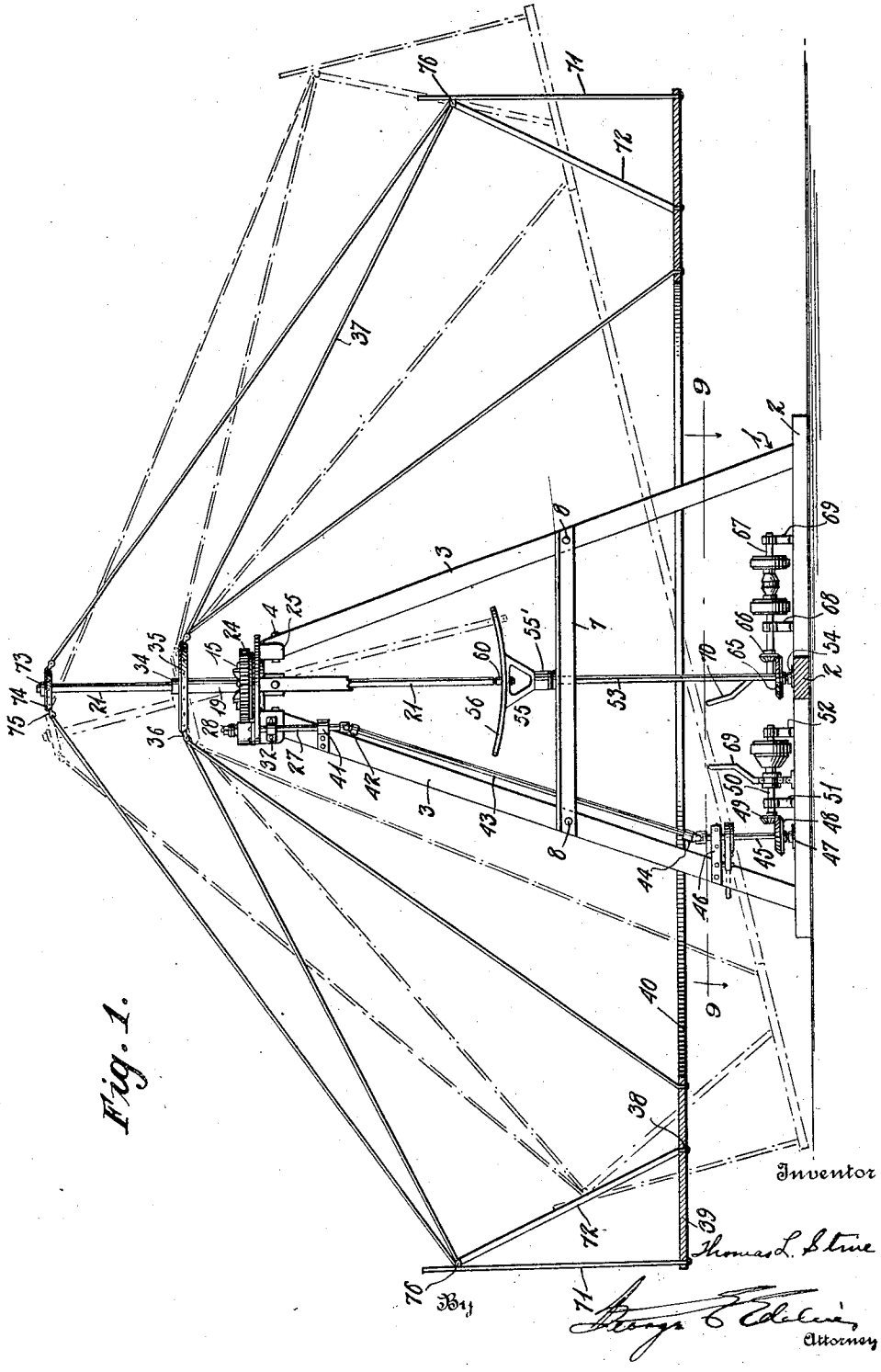

Fig. 1.

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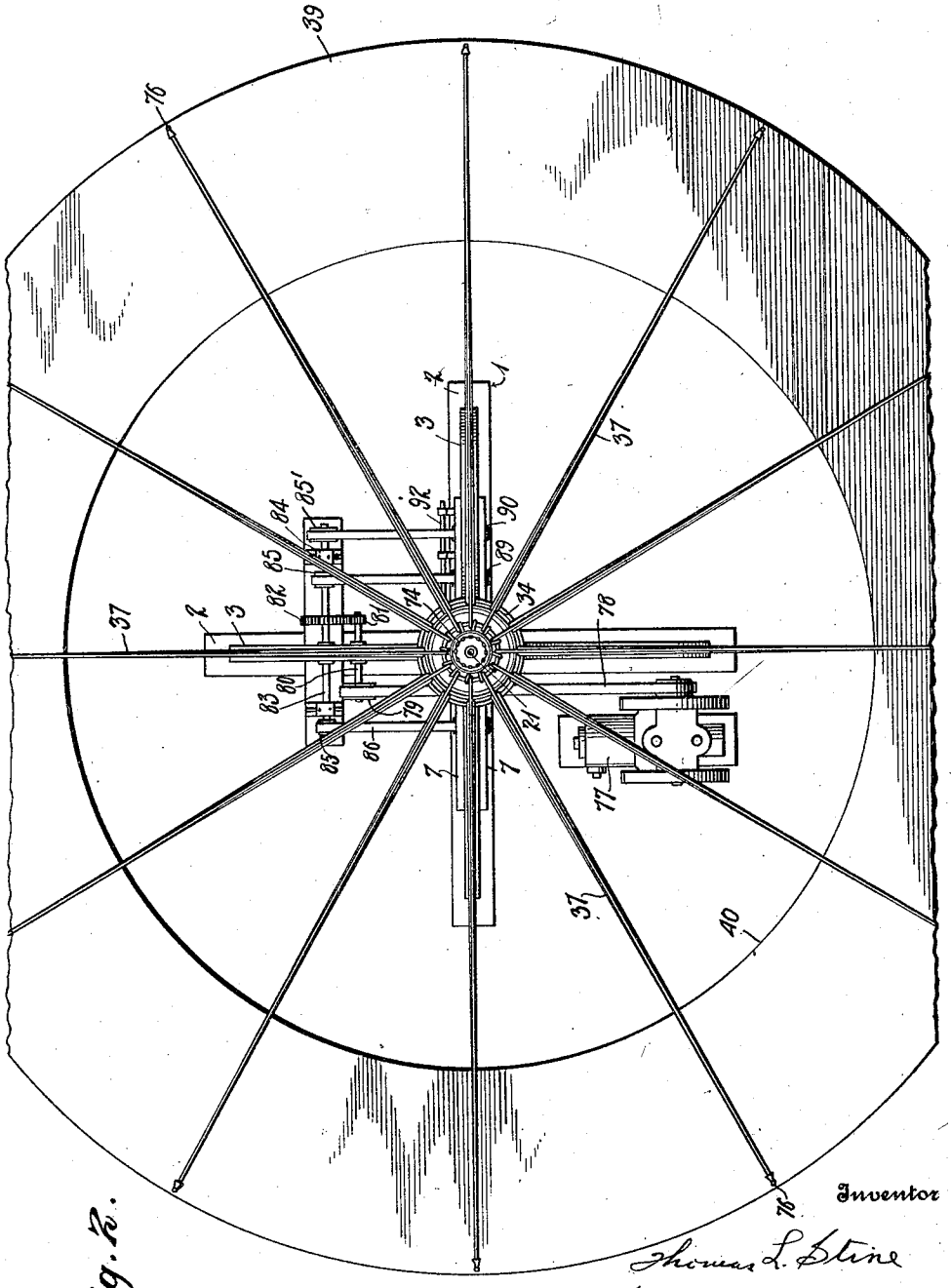

Fig. 2.

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Fig. 3.

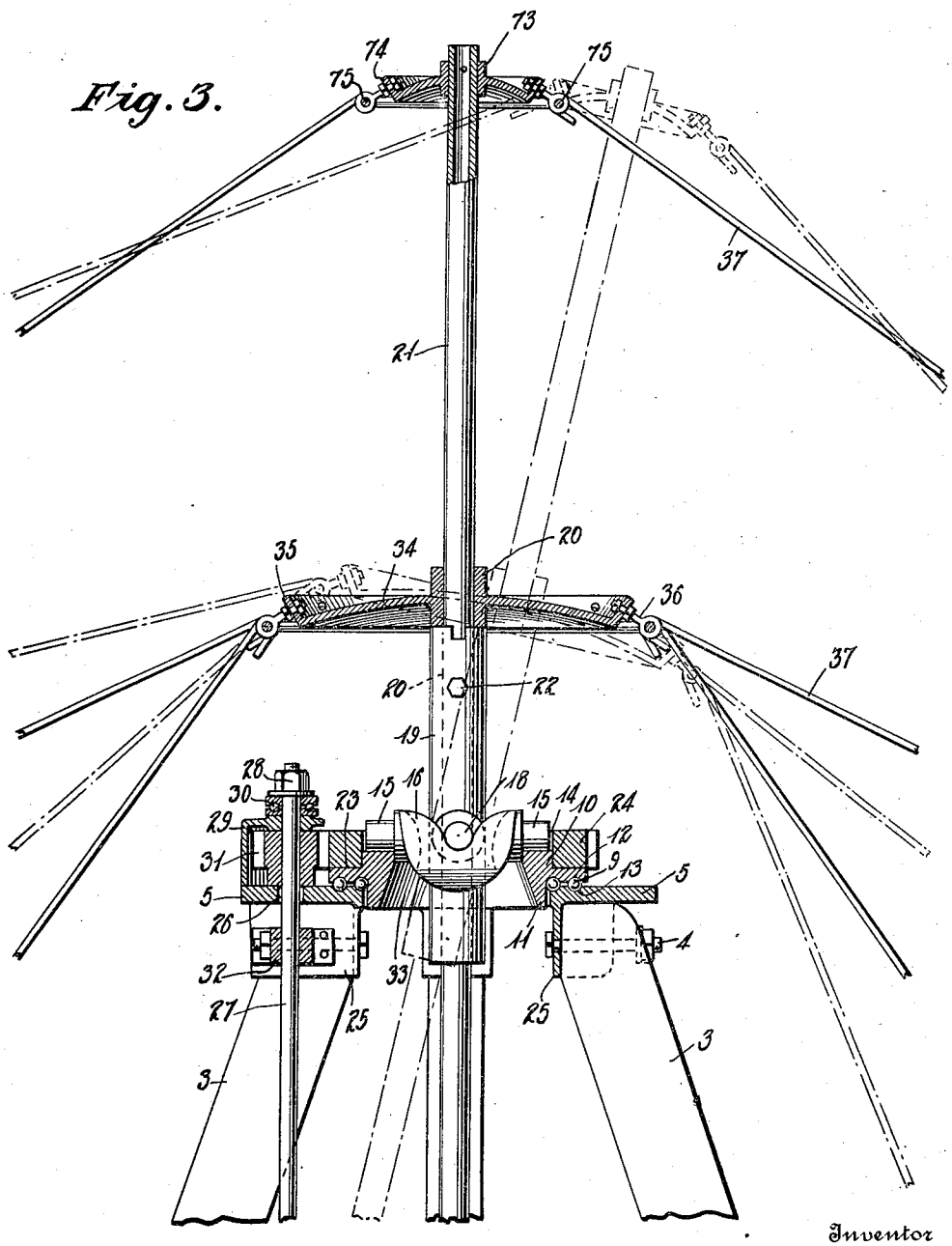

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Fig. 4.

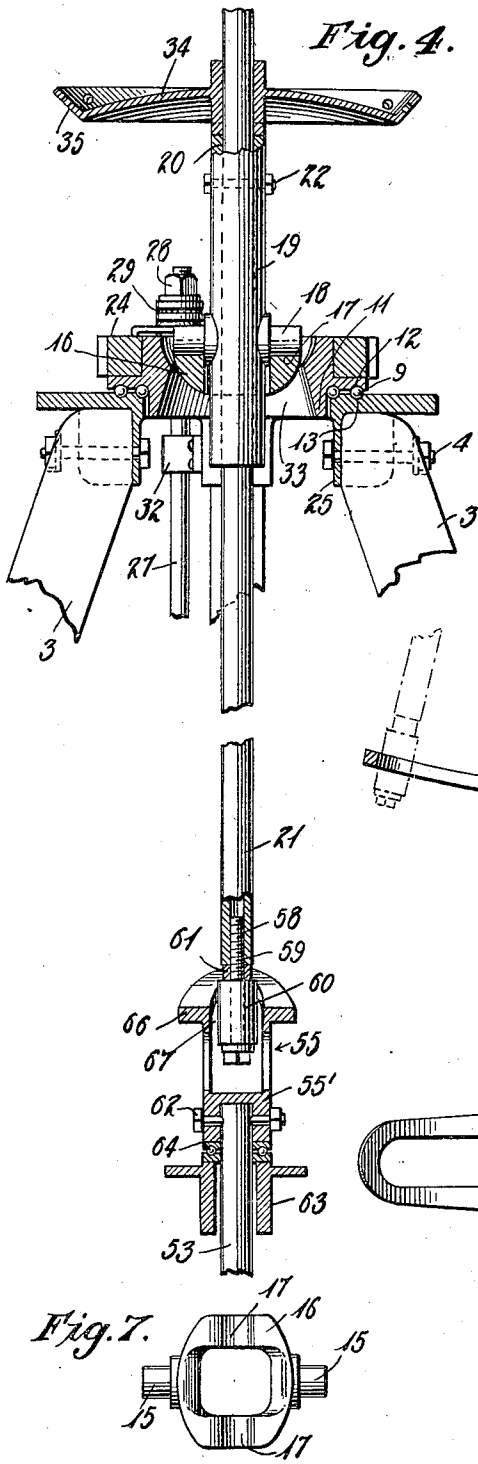

Fig. 8.

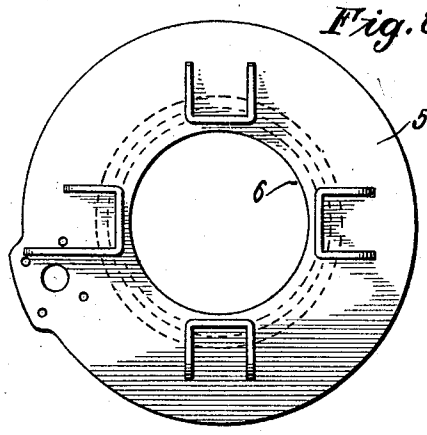

Fig. 5.

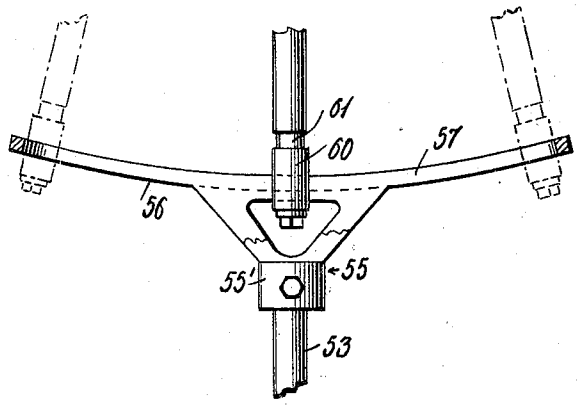

Fig. 6.

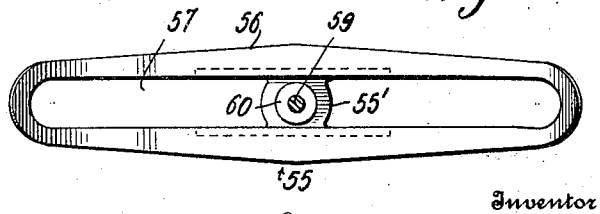

Fig. 7.

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Fig. 9.

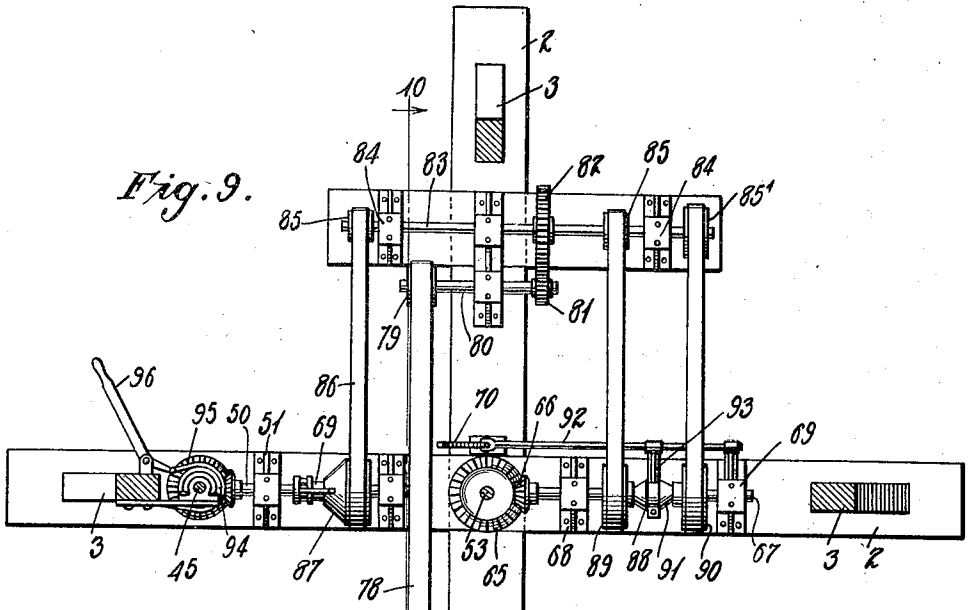
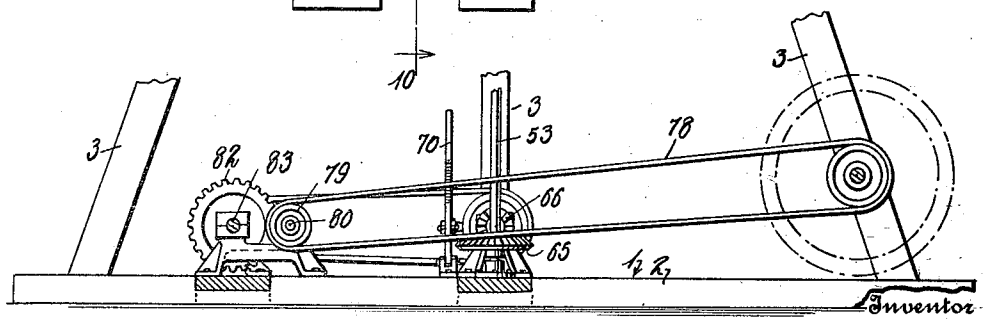


Fig. 10.



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Patented Dec. 30, 1924. 1,521,568

UNITED STATES PATENT OFFICE.

THOMAS L. STINE, OF TREGO, MARYLAND; HERBERT G. STINE ADMINISTRATOR OF SAID THOMAS L. STINE, DECEASED.

AMUSEMENT DEVICE.

Application filed November 7, 1922. Serial No. 599,532.

To all whom it may concern:

Be it known that I, THOMAS L. STINE, a citizen of the United States, residing at Trego, in the county of Washington and State of Maryland, have invented certain new and useful Improvements in Amusement Devices, of which the following is a specification.

The invention relates to amusement devices and has particular reference to devices commonly known as carrousels and which comprise generally a circular platform revolving about a central shaft or axis and which platform is designed to afford seating accommodations for a plurality of persons.

One of the objects of my invention is to provide an amusement device of the character described which is provided with a plurality of rolling or dipping motions which in conjunction with the usual rotary motion of the carrousel, results in a peculiar sensation and which is designed to attract the pleasure seeking public who are in search of something different than the usual form of merry-go-round or carrousel, in which latter type only the usual monotonous rotating motion is produced.

A further object of the invention is to provide an amusement device simply and compactly arranged and in which all the working parts thereof are completely housed within the device as a unitary plant or structure, and which device, including its power plant, may be conveniently dismantled and moved from place to place as desired.

A further object of the invention is to provide an amusement device in which the several motions imparted to the device are readily controlled by a single operator standing within ready access of the various control levers.

A further object of the invention is to provide an amusement device which is strongly constructed and which may be operated with a maximum safety to the occupants thereof.

A further object of the invention is to provide an amusement device which is susceptible of a peculiar floating motion characterized by the continued dipping of a platform revolving about a central tower, which dipping is caused by the platform being swung from the horizontal plane on two occasions in each revolution of the platform.

A further object of the invention is to provide an amusement device, the parts of which are so proportional and arranged as to result in a very rugged and durable structure in which the element of danger by reason of failure of the parts to function is materially reduced and to also provide a structure in which the parts may operate with a minimum of friction.

With such objects in view, as well as other advantages which may be incident to the use of the improvements, the invention consists in the parts and combinations thereof hereinafter set forth and claimed, with the understanding that the several necessary elements constituting the same may be varied in proportions and arrangement without departing from the nature and scope of the invention.

In order to make the invention more clearly understood there are shown in the accompanying drawings means for carrying the same into practical effect, without limiting the improvements, in their useful applications, to the particular constructions which, for the purpose of explanation, have been made the subject of illustration. In the same drawings:—

Figure 1 is a central vertical section through the revolving platform of the device, the central working parts thereof being shown in elevation.

Fig. 2 is a plan view of the same.

Fig. 3 is an enlarged fragmentary sectional view partially in elevation, of the centrally disposed vertical supporting tiltable shaft shown in Fig. 1.

Fig. 4 is a view similar to Fig. 3 looking at right angles to the same.

Fig. 5 is an enlarged detail view of the dip bracket.

Fig. 6 is a plan view of the same.

Fig. 7 is a plan view of one of the rocking cradle members.

Fig. 8 is a bottom plan view of the supporting anti-friction table on which the revolving elements of the structure are designed to rotate.

Fig. 9 is an enlarged sectional view on line 9—9 of Fig. 1.

Fig. 10 is a section on line 10—10 of Fig. 9.

Referring to the drawings, 1 designates

generally a suitable supporting base comprising members 2 extending at right angles to one another and provided near the outer ends thereof with a plurality of suitable upwardly extending inclined supporting members 3 securely bolted as at 4 at their upper ends to an annular supporting table member 5 having a centrally disposed circular aperture 6. The members 3 are further provided intermediate their length with one or more tie bolts 7 bolted or otherwise secured as at 8 to the members 3 and constituting with the latter, the bolt 5 and the base 1, a rigid unitary supporting structure.

Rotatably mounted on and anti-frictionally supported as by a ball race 9 is a shaft supporting member or casting 10. The member 10 is preferably machined and provided with a depending hub portion 11 arranged to revolve within the guiding aperture 6 of the table 5 and is further provided with annular grooves 12 forming a suitable guide for the ball race 9. The table 10 is provided on its upper surface with similar annular ball-retaining grooves 13, opposing the grooves 12. As best seen in Fig. 3 the member 10 is further provided on its upper surface with oppositely disposed grooves or recesses 14 forming a rocking seat for trunnions 15 on a shaft supporting cradle member 16. The member 16 is provided with machined grooves or recesses 17 disposed at right angles to the trunnions 15 and these grooves 17 provide a rocking support for trunnions 18 integrally formed with a shaft supporting sleeve member or casting 19. The member 19 is provided with a central longitudinally extending aperture 20 in which is rigidly secured for longitudinal adjustment as by the bolt 22, a substantially vertical rotatable upper supporting shaft 21.

The member 10 is provided with an outer annular shoulder or depression 23 forming a seat for a horizontally disposed gear 24 rigidly connected, preferably by shrinking, to the member 10. The table 5 is provided on its lower surface with a plurality of depending flanged reinforcing web members 25 by means of which the table 5 is securely bolted to the frame members 3. The table 5 is further provided on the horizontal portion thereof with an aperture 26 through which passes a vertically disposed drive shaft 27. The shaft 27 is provided at its upper end with a nut and washer 28 suitably spaced by means of a housing member 29 from the table 5 and antifrictionally spaced from said housing by a thrust bearing 30. Rigidly secured to the shaft 27 within the housing 29 is a pinion 31 meshing with the gear 24. The shaft 27 is further held in fixed relation to the table 25 by a journaled bearing support 32 forming an integral portion of one of the flange members 25 of the table member 5. The cradle supporting member 10 is suitably centrally apertured as at 33 to accommodate the rocking movement of the shaft 21 and sleeve 19 on the oppositely disposed pairs of trunnions 18 and 15.

The upper portion of the member 19 is integrally formed with an annular supporting plate 34 having a continuous upturned outer flange portion 35 in which are adapted to be secured a plurality of supporting eye and bolt members 36. The latter provide means for attachment for a plurality of guides or supporting tie members or ropes 37 which are rigidly secured as at 38 to a rotating platform 39. The platform 39 is in the form of an annular ring being centrally apertured as at 40 to permit the supporting structure above described to extend therethrough. The annular portion 39 of the platform is designed to provide seats for persons who are to be amused by the device.

The lower end of the shaft 27 is journaled in a bearing 41 and is provided at its lower end with a universal connection 42 with the upper end of an intermediate inclined shaft 43 having at its lower end a similar universal connection 44 with the upper end of a stud shaft 45. The latter is rotatably supported at its upper end by the journal bracket 46 attached to the member 3 and at its lower end is suitably journaled as at 47 in the base 1 of the machine (Fig. 1). A bevel pinion 48 is rigidly secured near the lower end of the shaft 45 and meshes with a second pinion 49 rigidly mounted on one end of the horizontally disposed power shaft 50. The latter is rotatable and horizontally supported by bearings 51 and 52 secured in any desired manner within the base of the supporting structure. From the foregoing it will be seen that when the amusement device is in operation the shaft 21 is rotated by means of the cooperative driving relation of the power shaft 50, gears 48 and 49, shafts 43, 45 and 27, pinion 31 and gear 24.

As best seen in Figs. 1 and 4 a shaft 53 is rotatably mounted in a vertical position within the base 1 of the supporting frame structure, being journaled at its lower end in a suitable bearing 54 attached to said base and similarly journaled near its upper end within said frame structure. It will be observed that when the upper shaft 21 is in its normal vertical position the same is in alinement with the shaft 53, there being no positive driving engagement between the respective shafts. The upper end of the shaft 53 has rigidly secured thereto at its upper end a dip bracket member 55 comprising a hub portion 55′ and an upper curved guide portion 56 having an elongated slot 57 arranged centrally thereof. The lower end of the shaft 21 is apertured and threaded as

at 58 to receive the threaded stud 59 having journaled for rotation thereon the anti-friction roller 60. The roller 60 is maintained in position on the lower end of the shaft 21 by the headed end of the stud or bolt 59 and is preferably spaced from the lower end of the shaft 21 by a washer 61. The roller 60 is contained within the elongated slot 57 of the dip bracket 56 where it will be seen that said roller is at all times contained within the limits of the slot 57, and will, during the operation of the device, roll with little friction around the configuration of said slot. The upper end of the shaft 53 is bolted or otherwise secured as at 62 to the hub portion 55′ of the dip bracket member and the latter is anti-frictionally spaced from the bearing portion 63 at the upper end of the shaft 53 by the thrust bearing member 64.

Means for rotating the shaft 53 are provided in a gear 65 rigidly mounted on the lower end of said shaft and meshing with a pinion 66 similarly mounted on one end of a horizontally disposed power shaft 67 suitably supported as by bearing members 68 and 69 for rotation at the base of the supporting structure. The power shafts 50 and 67 are preferably driven from a common source of power but are independently controlled by means of the respective clutch levers 69 and 70. It will thus be seen that independent means of rotation is afforded the upper shaft 21 and lower shaft 53.

From the foregoing it will be observed that the operation of the amusement device is as follows:—

After the passengers have become seated the shaft 21 and platform 39 carried thereby are caused to rotate by the actuation of the lever 69 setting in motion the power shaft 50 and the several shafts and driving elements above described. It will be seen that the platform 39 and passengers contained thereon are caused to travel in a circular path integrally with and in a speed proportionate to the speed of the shaft 21 and it will be observed that if the platform 39 is not tilted due to difference in weight of the passengers the same would maintain a substantially horizontal position during its rotation. On the other hand should the weight of one side of the platform 39 overbalance the weight on the opposite side the platform would assume the position shown in dotted lines in Fig. 1, the supporting shaft 21 being tilted on the trunnions 18 resting in the cradle member 16, and in the absence of any rotation of the shaft 53 the platform 39 and passengers contained thereon would continue to be rotated by the shaft 21. This motion results in an undulating or oscillatory movement of the platform during its rotation by the shaft 21, the extent of said undulating movement being controlled by the elongated slot 57 of the dip bracket 56 in which latter the lower end of the shaft 21 oscillates as it is rotated. This undulating or oscillatory movement is caused by the uneven distribution of weight on the platform and the platform dips downwardly when its weighted portion reaches the normal horizontal plane of the platform and the normal vertical plane of the slot 57 during its rotation. The weighted portion of the platform is subsequently again carried upwardly to the normal horizontal plane of the platform by the driving movement transmitted to the dip bracket by the lower power shaft 53.

However, in order to impart a rolling or dipping motion to the platform 39 the lower vertical shaft 53 is rotated simultaneously with the shaft 21, said rotation of the shaft 53 being actuated by the lever 70 and controlled by the power shaft 67 and intermeshing pinions 55 and 57. It will be apparent that the coincident rotation of the shafts 21 and 53 will result in a rolling or dipping action due to the shaft 21 being thrown by centrifugal force into one end of a slot 57 in the dip bracket member 56 (shown in dotted lines in Fig. 1), and at each half revolution of the shaft 53 the shaft 21 will travel to its furthest limit at the opposite end of the guiding slot 57 and this tilting of the shaft 21 is permitted by the rocking of the same upon the trunnions 15 in the opposed recesses 14 of the rotating member 10. A unique sensation is afforded to passengers upon the platform 39 by the motion above described to the extent that while traveling in a circular path there is a rolling or dipping motion of the platform 39, there being two distinct dips of the platform from side to side with each revolution of the shaft 21 and platform. Positive driving connection between the pinion 31 and gear 34 is at all times maintained due to their mountings independent of the oscillations of the shaft 21 on the separate pairs of trunnions 15 and 18, and the oscillations of the shaft 21 are accommodated for and permitted by the cut-away portion 33 of the rotating member 10. The amount of tilting of the platform 39 may be controlled by the length of the slot 57 and I have found that the most desirable amount of such tilting is approximately an angle of 12 degrees from the horizontal, although this angle of tilting maybe increased or diminished as desired by regulating the length of the slot 57 in the bracket member 56.

In Fig. 1 I have shown for purposes of clearness only two sets of radially extending guys or platform supporting elements 37, but it will be understood that any desired number of these guys may be employed extending radially from the other supporting connection of the shaft 27 to variously spaced points on the platform. I have shown

in Fig. 2 twelve sets of these guys or supporting members 37 extending radially to suitable connections on the platform 39. The latter is further provided with a plurality of upwardly extending reinforcing members 71 and equal number of transversely crossing supports 72 inclined thereto and serving to reinforce the platform structure as an entirety. The upper end of the shaft 21 has a rigid supporting plate 73 mounted thereon and having a continuous annular flange 74 similar to the flange 35 on the plate 34. Preferably an equal number of guy wires 37 extend radially from different eye and bolt connections 75 of the annular flange 74 to suitable ears 76 or points of support on the upstanding members 71.

As best seen in Figs. 1, 2, 9 and 10 the operation of my amusement device is controlled from a single source of power. The latter may be a motor or gasoline engine and as illustrated in the drawings I have shown an internal combustion engine of any desired form indicated at 77 and preferably located within the base of the supporting structure. Power from the plant 77 is supplied by a belt 78 to a pulley 79 on one end of a shaft 80 mounted on the base of the structure. The other end of the shaft 80 is provided with a pinion 81 meshing with and driving a gear 82 mounted intermediate the length of a second shaft 83 supported at either end by bearings 84 on the base of the device and having a plurality of pulleys 85 and 85′. thereon. Power to the shaft 50 is supplied from the shaft 83 by a belt 86 passing over a drum clutch 87 on the inner end of the shaft 50. By operating the lever 69 the rotation of the shaft 50 may be controlled by actuation of the drum clutch 87 and the rotation of the shaft 50 and shaft 21 may be stopped independently of the shaft 53 and other rotating elements of the mechanism. I have provided two operating speeds for the shaft 53 and consequently may vary the speed of the table dipping motion of the platform 39. To this end I have provided intermediate the shaft 67 a double cone clutch indicated at 88, and comprising idler portions 89 and 90 loosely revolving at different speeds on the shaft 67 by reason of the difference in size of the pulleys 85 and 85′. The clutch 88 further comprising a central cone portion 91 keyed to the shaft 67. Referring to Fig. 9, when it is desired to rotate the shaft 67 and shaft 53 geared thereto at a comparative slow rate of speed I move the control lever 70 and slide rod 92 connected thereto to the left. The cone portion 91 keyed to the shaft 67 is moved by the fingers 93 into frictional driving engagement with the previously loosely rotating member 89 of the clutch and this driving engagement is imparted to the shaft 67 and shaft 53 geared thereto. When it is desired to increase the speed after the device has been in operation I move the control lever 70 to the right and I effect a similar driving operation of the keyed portion 91 of the clutch with the loosely rotating pulley member 90 and by reason of the increase in speed between the pulleys 89 and 90 I effect an increased speed of the shaft 67 and consequently the shaft 53 and the speed of the dipping motion is proportionately increased. Any desired number of speed reductions may be employed by increasing the number of pulleys shown in Fig. 9 and any desired speed ratio may be obtained by varying the size of the several pulleys described.

Suitable braking mechanism for the device have been provided on the shaft 45 and comprise a brake drum 94 mounted on said shaft and having a brake shoe 95 loosely bearing thereagainst and having a suitable connection to the lower end of a hand control lever 96. Referring to Fig. 9 when it is desired to brake the mechanism to bring the platform 39 to a stop the movement of the brake lever 96 to the right brings the brake shoe 95 into tight frictional engagement with the drum 94 resulting in cessation of rotation of the shaft 45 and connections thereabove. This braking operation is performed after the shaft 50 has been disengaged from the power plant by a movement of the control lever 69.

What is claimed is:

1. An amusement device comprising a frame, a pair of rotatable cradles supported by said frame, one of said cradles being movable in vertical planes relative to the other, an upper shaft journaled in said movable cradle, and movable in vertical planes at right angles to the planes of movement of said movable cradle, a lower shaft journaled in said frame and having means engaging said upper shaft, whereby said upper shaft is carried around with said lower shaft, a rotatable platform carried by said upper shaft, and means for rotating said shafts.

2. An amusement device comprising in combination: a frame, a rotary cradle held from vertical movement supported by said frame, a second rotary cradle supported by said frame and movable in vertical planes relative to said first mentioned cradle, an upper shaft journaled in said second cradle and movable in vertical planes relative thereto, a lower shaft journaled in said frame, a yoke carried by said lower shaft and engaging the lower end of said upper shaft to limit the oscillatory movement thereof, a rotatable platform carried by said upper shaft, and means for rotating said upper and lower shafts.

3. An amusement device comprising in combination: a supporting frame including a shaft, a rotatable platform carried by said frame, a table mounted in the upper end of

said frame, a gear supporting member rotatably mounted on said table, a gear carried by said rotatable member, a cradle member mounted for oscillatory movement within said rotatable member, a sleeve mounted for oscillatory movement in said cradle member, and adjustably carrying said shaft, and means for continuously rotating said gear and said rotatable member on said table, whereby oscillatory movement of said shaft is permitted in planes at right angles to one another during the rotation of said rotatable member, said oscillatory movement of said shaft being transmitted to said platform during the rotation of the latter.

4. An amusement device comprising in combination: a supporting frame including a shaft, a rotatable platform carried by said frame, a table secured to the upper portion of said frame, a rotatable member carried by said table, anti-friction means interposed between said rotatable member and said table, diametrically opposed recesses disposed in said rotatable member, a cradle member mounted for oscillation in said rotatable member, said cradle member having diametrically opposed trunnions engaging said recesses in said rotatable member, diametrically opposed recesses in said cradle, said latter recesses being disposed at right angles to the recesses in said rotatable member, a sleeve, trunnions on said sleeve adapted to be mounted for oscillatory movement in said recesses in said cradle member, said shaft being adjustably carried by said sleeve and supporting said platform, a ring gear mounted on said rotatable member, means for rotating said gear, and means for imparting oscillatory movement to said shaft and said platform in planes at right angles to one another during the rotation of said shaft.

5. An amusement device comprising in combination: a platform continuous around a center, an upwardly extending lower shaft arranged within said platform, an upper shaft pivotally supported at a point above said lower shaft and carrying said platform, guiding means connecting said shafts whereby said upper shaft and said platform are carried around with said lower shaft, means for rotating said upper shaft independently of said lower shaft, means for rotating said lower shaft independently of said upper shaft, said upper and lower shaft rotating means being separately controlled and operated from a common source, and means for braking said shafts.

6. An amusement device comprising in combination: a platform continuous around a center, an upwardly extending lower shaft arranged within said platform, an upper shaft pivotally supported at a point above said lower shaft and carrying said platform, guiding means connecting said shafts whereby said upper shaft and said platform are carried around with said lower shaft, means for rotating said upper shaft independently of said lower shaft, means for rotating said lower shaft at variable speeds, said upper and lower shaft rotating means being separately controlled and operated from a common source, and means for braking said shafts.

In testimony whereof I affix my signature.

THOMAS L. STINE.